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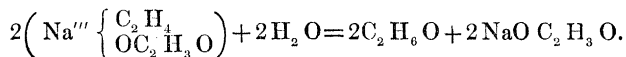
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Acetate of ethylene-sodium yields alcohol and common acetate of soda on treatment with water :—



The extreme lightness of the so-called ethylate of sodium (it swims in ether) is a reason for regarding it as a compound belonging to a less condensed order of sodium-compound than ordinary sodium-compounds. The property of yielding up its olefine in the shape of alcohol when it is treated with water is a reason for assigning to the new compound given by the action of acetic ether the above formula, and shows that the olefine is associated with the alkali-metal, not with the acid.

IV. "On the Temperature of the Human Body in Health." By SYDNEY RINGER, M.D. (Lond.), Professor of Materia Medica in University College, London, and the late ANDREW PATRICK STUART. Communicated by Dr. BASTIAN. Received December 18, 1868.

(Abstract.)

These observations were conducted by the authors in order to learn with minuteness the fluctuations of the temperature in health. They were performed on persons of different ages, and were in many instances continued through the night and day.

The temperature was noted every hour, and on many occasions much more frequently.

The following subjects are discussed in this communication :—

1. The daily variation of the temperature.
2. The effects of food on the temperature.
3. The effects of cold baths on the temperature.
4. The effects of hot baths on the temperature.

From their observations and experiments the authors have drawn the following conclusions :—

The average maximum temperature of the day in persons under 25 years of age is $99^{\circ}1$ Fahr. ; of those over 40, $98^{\circ}8$ Fahr.

There occurs a diurnal variation of the temperature, the highest point of which is maintained between the hours of 9 A.M. and 6 P.M. At about the last-named hour the temperature slowly and continuously falls, till, between 11 P.M. and 1 A.M., the maximum depression is reached. At about 3 A.M. it again rises, and reaches very nearly its highest point by 9 A.M.

The diurnal variation in persons under 25 amounts, on an average, to $2^{\circ}2$ Fahr. ; but in persons between 40 and 50 it is very small, the average being not greater than $0^{\circ}87$ Fahr. ; nay, on some days no variation whatever happens. In these elderly people the temperature still further differs

from that of young persons; for in the former the diurnal fall occurs at any hour, and not, as is the case with young persons, during the hours of night.

Concerning the influence of food on the temperature of the body the authors have concluded that none of the diurnal variations is in any way caused by the food we eat.

The experiments to prove this conclusion are very numerous. Some were made with the breakfast, others with the dinner and tea; but all point to the conclusion just stated.

This important question is very fully discussed in the section devoted to it.

By cold baths both the surface of the body and the deep parts were lowered in temperature. The temperature of the surface was in some instances reduced to 88° Fahr.; but the heat so soon returned to all parts as to show that the cold bath is of very little use as a refrigerator of the body.

The cold bath produced no alteration in the time or amount of the diurnal variation. This began at the same hour, and reached the same amount as on those days when no bath was taken.

By hot-water or vapour baths the heat of the body could be raised very considerably. Thus, on some occasions, when using the general hot bath, the temperature under the tongue was noted to be between 103° and 104° Fahr., a fever temperature.

The body being heated considerably above the point at which combustion could maintain it, it was then shown with what rapidity heat may be lost, simply by radiation and evaporation. The particulars of these results are given in the paper.

The experiments tend to prove that hot baths in no way affect the diurnal variation of the temperature.

V. "Preliminary Note of Researches on Gaseous Spectra in relation to the Physical Constitution of the Sun." By EDWARD FRANKLAND, F.R.S., and J. NORMAN LOCKYER, F.R.A.S.
Received February 11, 1869.

1. For some time past we have been engaged in a careful examination of the spectra of several gases and vapours under varying conditions of pressure and temperature, with a view to throw light upon the discoveries recently made bearing upon the physical constitution of the sun.

Although the investigations are by no means yet completed, we consider it desirable to lay at once before the Royal Society several broad conclusions at which we have already arrived.

It will be recollected that one of us in a recent communication to the Royal Society pointed out the following facts:—

- i. That there is a continuous envelope round the sun, and that in the